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REMARKS

Claims 1, 3, 6 and 9 have been amended. Upon entry of the above amendments, claims 1-12 will remain pending and under consideration in this application.

Election/Restrictions

Applicant appreciatively acknowledges the Examiner's careful consideration of the claims and decision to examine claims 1-12 in this application.

Claim Objections

Claims 3 and 9 have been objected to because there is insufficient antecedent basis for "the insole." The objection has been overcome by amending claims 3 and 9 to require that the foot-operated controller is "located on or within a shoe."

Rejection Under 35 U.S.C. §102

Claims 1, 3-4, 6, 9-10 and 12 have been rejected under 35 U.S.C. §102(a) as being anticipated by Biedermann (U.S. Patent No. 6,423,098).

It is respectfully submitted that Biedermann does not disclose a foot-operated controller. The pressure sensors (S4-S7) disclosed by Biedermann are provided in the foot region of a prosthetic leg, and are actuated by movement of the prosthetic limb, not by application of pressure from selected parts of a foot. More specifically, pressure sensors S4-S7 measure the weight or force distribution on the bottom of the foot portion of the prosthetic leg. Sensors S4-S7 disclosed by Biedermann cannot be controlled by application of pressure from selected parts of a foot. Further, there is not any suggestion in Biedermann that sensors S4-S7 may be employed on a foot-operated controller.

In order to further distinguish over the prior art, the claims have been amended to specify that the foot-operated controller includes "a shoe insole insert including a substrate having a plurality of pressure sensors mounted at selected locations on the substrate to facilitate control of a controllable device by application of pressure from selected parts of a foot to the sensors." The Biedermann patent does not teach or suggest a shoe insole insert. Therefore,

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the Biedermann patent does not anticipate the claimed invention. Support for this amendment can be found, for example, at page 4, lines 18-22 of the specification.

Rejection Under 35 U.S.C. §103

Claims 5 and 11 stand rejected under 35 U.S.C. §102(a) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over Biedermann.

It is respectfully submitted that these claims are patentable for the reasons generally set forth above. Notably, the Biedermann patent does not teach or suggest a foot-operated controller in which pressure sensors are actuated by application of pressure from selected parts of a foot, or a foot-operated controller comprising a shoe insole insert. Moreover, while Biedermann does not have any motivation for mounting the microprocessor on the same substrate on which the sensors are mounted, since it can be mounted anywhere on the prosthetic leg, there are distinct advantages in mounting the microprocessor on the shoe insole insert of a foot-operated controller that is actually controlled by application of pressure from selected parts of a foot, such as the toes or ball of the foot. This is highly advantageous with the claimed invention, since it eliminates the need for strapping or otherwise attaching the microprocessor to the person operating the claimed foot-operated controller.

Claims 2 and 8 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Biedermann. The Examiner has stated that the use of a radio transmitter to communicate commands between components "amounts to mere substitution of one functionally equivalent communication system for another within the art of controlled devices." There is not any motivation for utilizing a radio transmitter in the prosthetic leg of Biedermann. It is simpler and less expensive to simply hard-wire the microprocessor output to cylinder 7 to control the Biedermann artificial leg. However, with the claimed invention, it is highly advantageous to utilize a radio transmitter to avoid stringing wiring along a person's body from the foot-operated controller to a controllable prosthetic device, such as a prosthetic hand. Further, claims 2 and 8 are allowable for the reasons generally set forth above. Most notably, Biedermann does not teach or suggest a foot-operated controller having pressure sensors that are actuated by application of pressure from selected parts of a foot, and does not teach or

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suggest a foot-operated controller comprising a shoe insole insert.

Claims 1-12 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Alderson (U.S. Patent No. 2,640,994) in view of Biedermann. The Examiner's position has been stated as follows:

Alderson discloses a foot-operated controller (figs. 31 or 36) comprising: a substrate (figs. 23, 24 and 35) having a plurality of pressure sensors (576, 578, etc. . .) mounted at selected location on the substrate (as shown) to facilitate control of a controllable device (prosthetic hand/arm) by application of pressure from selected parts of a foot to the sensors; and a control system (relay pouch) for receiving input from the sensors and converting the sensor inputs into commands for the controllable device.

However, Alderson does not disclose using a microprocessor as the control system. It is well known in the art of prosthetics to use a microprocessor as a control system for a prosthesis such as demonstrated by Biedermann. It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute a microprocessor such as taught by Biedermann for the control system of Alderson in order to control the prosthetic hand/arm. Such a modification amounts to mere substitution of one functionally equivalent control system for another within the art of prosthetics.

Alderson does not disclose a foot-operated controller having a plurality of pressure sensors. Elements designated by reference numerals 576, 578, etc. are referred to in the specification as "contact plugs." These contact plugs are capable of contacting conducting plates 582 and 584. Thus, Alderson discloses binary switches that are either open or closed, not a plurality of pressure sensors. Binary switches allow only a single speed motion, whereas the claimed controller allows variable speed control. Variable output pressure sensors were known and available at the time that Alderson filed his application for patent. However, Alderson did not perceive any value in utilizing pressure sensors in his invention, demonstrating an absence of motivation for employing pressure sensors in the Alderson apparatus.

There is not any motivation for utilizing a microprocessor in the apparatus described in the Alderson patent. Contact plugs 576, 578 in combination with the conducting plates provide

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simple on/off switches that do not require further signal processing. The claimed combination of pressure switches and a microprocessor affords variable signal strength from each sensor and the ability to process these signals to facilitate non-literal translation of the signals, thus enabling an extremely broad range of capabilities, such as changing the relationship between switches and actuators, scaling of inputs, rejection of false signals, etc. There is no similar or other need or motivation disclosed in the applied prior art references for microprocessor mediation of the simple on/off switching signals of Alderson, nor is there any obvious reason for processing the simple on/off signals of the Alderson controller. Accordingly, it is respectfully submitted that the combination of applied references does not provide motivation for a foot-operated controller utilizing a microprocessor for converting signals from pressure sensors into commands for a controllable device.

Further, with respect to claims 2 and 8, radio control technology had been well known and commercially available for decades at the time that Alderson filed his application for patent. This shows that Alderson did not perceive any benefit from utilizing radio control technology in his invention, and that those having ordinary skill in the art would not have been motivated to do so. The use of a radio transmitter in Applicant's invention is not a mere substitution of functionally equivalent means. It facilitates, transmission of a command string from the microprocessor to the controllable device (e.g., an artificial arm), a function that is not contemplated by Alderson.

CONCLUSION

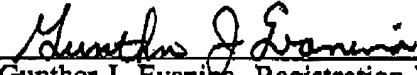
In view of the above amendments and remarks, it is respectfully submitted that the applied references do not teach or suggest the claimed combination involving a shoe insole insert including a substrate having a plurality of pressure sensors mounted at selected locations on a substrate to facilitate control of a controllable device by application of pressure from selected parts of a foot. Piecing together the individual components of the prior art in the

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manner required by the claims is not motivated by the prior art. Accordingly, a Notice of Allowance is earnestly solicited.

Respectfully submitted,

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Date



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